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# IPv6

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# Why IPv6?

- **IPv4 Address Space**

- **Shortage**

- **Most of the Available Address Space is Allocated**
    - **Future Internet Rich Nations Connecting**
    - **New Devices**
    - **New Applications**
      - VOIP
      - Video
      - Cellulars/Phones
      - Industrial Devices
    - **NAT is a poor solution**
      - Breaks Internet Model
      - Security Problems
      - Connection State Maintenance
      - Routing Problems
      - Application Incompatibility

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# Why IPv6? (con't)

## • IPv6 Features

- **Address Space (128 bits)**
- **Auto-configuration and Mobility**
- **QOS**
- **Protocol Functionality - Multicast and Multimedia**
- **Security - Mandatory IPSec**
- **Unlimited Protocol Extensions**
- **Tag Switching (MPLS)**
- **Huge Packets**



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# Drivers

- **No Current DOD Mandate**
- **International Use / Connectivity**
  - **Need for IPv6 Only Resources**
  - **Collaboration**
  - **IPv6 Only Applications**
- **Feature Set Need**

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# Transition

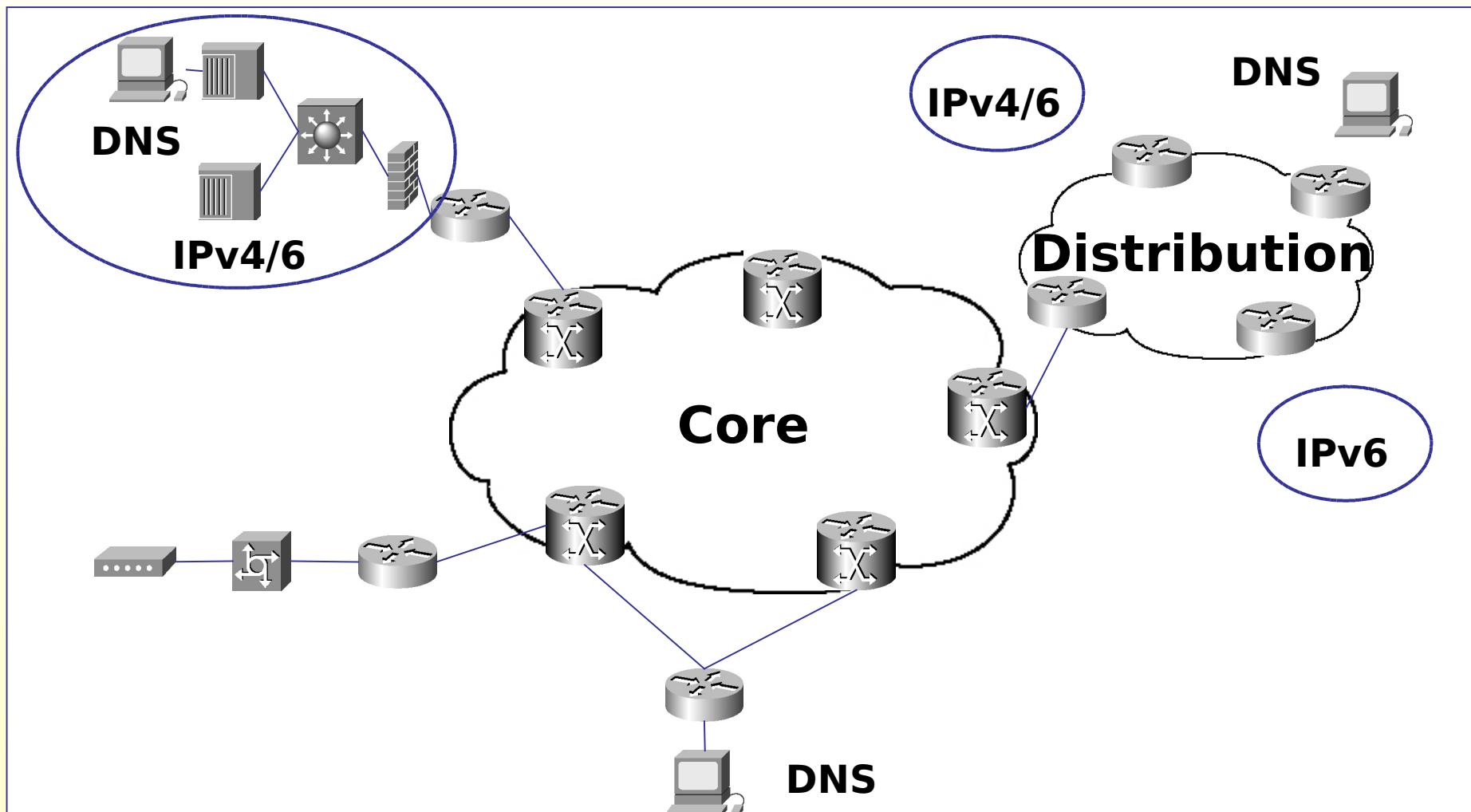
- **SIT - Simple Internet Transition**
- **Dual Stack Configurations (10 Years)**
- **DNS**
- **Operating Systems (Now)**
  - **Windows**
  - **Unix**
  - **Linux**
- **Applications (Soon)**
- **Networks (2 - 3 Years)**
- **Internetworks (3 - 5 Years)**

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# Transition Scope



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# Issues

- **DNS Quad A Records**
- **Security / Firewalls / Filtering**
  - Tunneling
- **Application Development**
  - TCP/IP Not Necessarily Transparent
- **Networking**
  - Tunneling
  - Protocols
    - IGP
    - BGP

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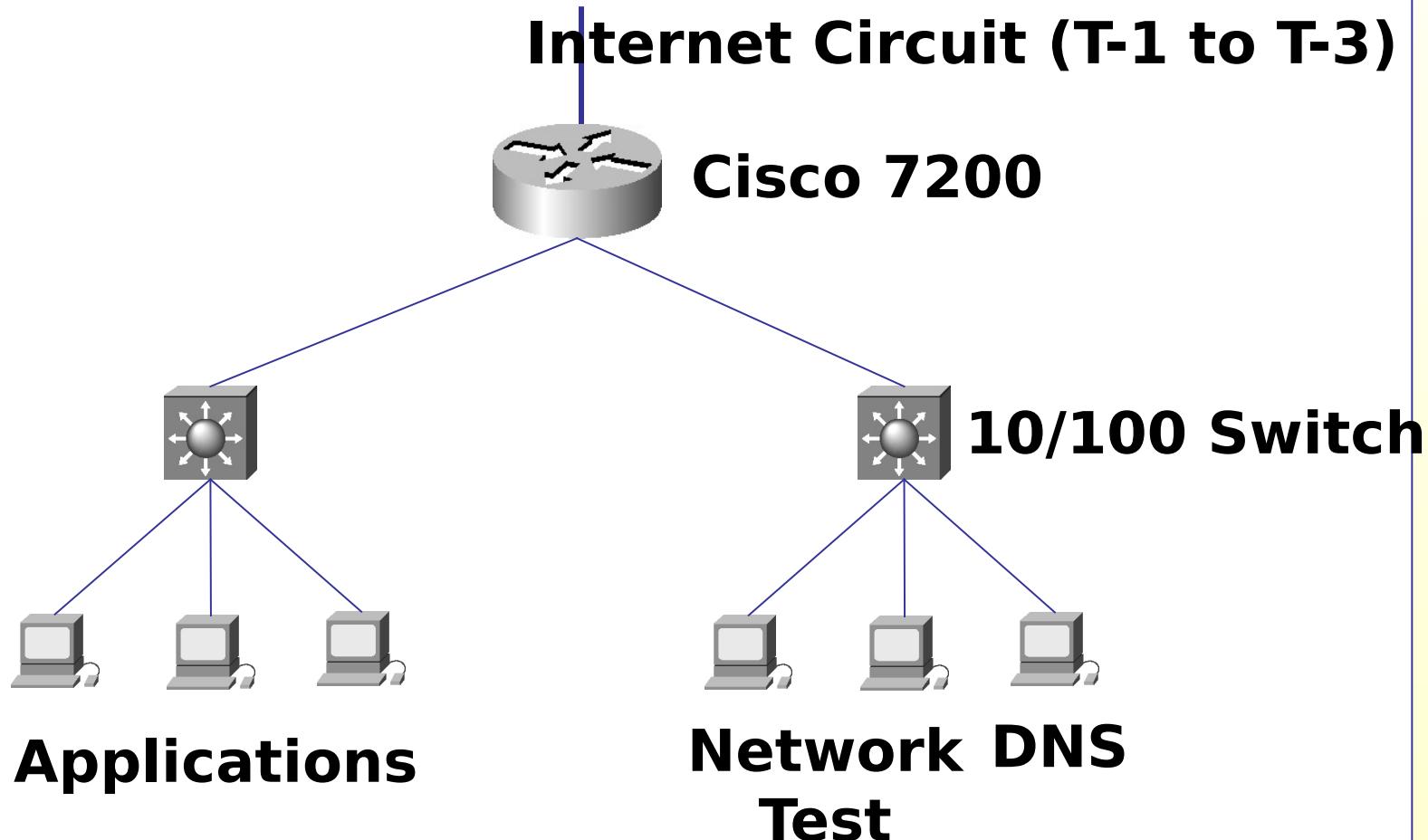
# Next Steps

- **Finalize DOD Policy (OSD)**
- **Acquire DOD/US IPv6 Address Space (DISA)**
  - Working With IANA / Commerce
- **Build DISA/NEAF Test Bed**
  - `ipv6.iern.disa.mil`
- **Develop IPv6 Transition Strategy (DISA)**



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# **Test Bed**



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